

## Chapter Three Semantics

**1. Principle of Bivalence:** In any possible situation, a sentence is either true or false (not both).

### 2. Negation Rule

●	$\sim$ ●
1	0
0	1

### 3. Conjunction Rule

●	▲	$(\bullet \wedge \blacktriangle)$
1	1	1
1	0	0
0	1	0
0	0	0

### 4. Disjunction Rule

●	▲	$(\bullet \vee \blacktriangle)$
1	1	1
1	0	1
0	1	1
0	0	0

### 5. Conditional Rule

●	▲	$(\bullet \rightarrow \blacktriangle)$
1	1	1
1	0	0
0	1	1
0	0	1

- A sentence of the form “P **if and only if** Q” is a **biconditional**. Its formal translation, “ $(P \leftrightarrow Q)$ ”, is logically equivalent to “ $((P \rightarrow Q) \wedge (Q \rightarrow P))$ ”. (The **biconditional sign** “ $\leftrightarrow$ ” is called “**bicon**”.)
- Other English biconditional phrases are “**exactly on condition that**” and “**in just those cases where**”.
- The semantic rule for the biconditional is as follows.

## 6. Biconditional Rule

●	▲	$(\bullet \leftrightarrow \blacktriangle)$
1	1	<b>1</b>
1	0	<b>0</b>
0	1	<b>0</b>
0	0	<b>1</b>